

Application No.: 09/839,759
Amendment and Response dated: February 2, 2004
Reply to Office Action of: January 15, 2004
Docket No.: 1085-2 RCE2
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A. Amendments to the Claims:

The below listing of claims will replace all prior versions and listings of claims in the subject application.

Claims 1-7 (canceled)

Claim 8. (currently amended) The process of claim 12 wherein said ethane-rich stream contains at least 90 % by mole ethane.

Claim 9. (canceled)

Claim 10. (currently amended) The process of claim [[9]] 12 wherein said ethane-rich stream contains less than about 0.5 % by mole methane and less than about 3% by mole propane.

Claim 11. (currently amended) The process of claim 12 wherein said methane-rich stream contains at least 95% by mole methane.

Claim 12. (previously presented) A process for recovering ethane from a methane, ethane and propane containing gas stream comprising:

- (a) providing the hydrocarbon gas stream comprising from about 50 % to about 75 % by mole methane, from about 15 % to about 40 % by mole ethane and from about 1 % to about 4 % by mole propane;
- (b) cooling the hydrocarbon gas stream to provide a partially condensed feed stream;
- (c) separating said partially condensed feed stream into a vapor hydrocarbon feed stream and a condensed liquid hydrocarbon feed stream;

- (d) providing a cryogenic heat exchanger;
- (e) cooling the vapor hydrocarbon feed stream in a the cryogenic heat exchanger by heat exchange with a first cooling source, a second cooling source and a third cooling source to form a cooled and substantially condensed hydrocarbon feed stream, wherein said first cooling source is said condensed liquid hydrocarbon feed stream;
- (f) distilling said cooled and substantially condensed hydrocarbon feed stream and said condensed liquid hydrocarbon feed stream in a demethanizer column to form a methane-rich stream and an ethane/propane-rich stream, wherein said methane-rich stream is said second cooling source;
- (g) compressing said methane-rich stream to form a compressed methane-rich stream;
- (h) cooling said compressed methane-rich stream to form a compressed methane-rich stream;
- (i) turboexpanding said compressed methane-rich stream to a lower pressure to provide said third cooling source for said cryogenic heat exchanger;
- (j) distilling said ethane/propane-rich stream in a de-ethanizer column to form an ethane-rich stream and a propane-rich stream; and
- (k) recovering said ethane-rich stream.

Claim 13. (original) The process of claim 12 wherein said ethane-rich stream contains at least 96.5 % by mole ethane.

Claims 14- 15 (canceled)